

What is claimed is:

- 1 1. A tissue culture system comprising:
2 (a) at least one isolated neural cell expressing at least one LPA
3 receptor;
4 (b) a lysophosphatidic acid (LPA) compound; and
5 (c) a basal culture medium.
- 1 2. The tissue culture system of claim 1, wherein the form of said LPA
2 compound is selected from the group consisting of LPA 20:5, 18:1 (oleoyl), 16:0
3 (palmitoyl), and 14:0 (myristoyl).
- 1 3. The tissue culture system of claim 2, wherein the form of said LPA
2 compound is 18:1 (oleoyl) or 16:0 (palmitoyl).
- 1 4. The tissue culture system of claim 1, wherein said isolated neural cell is a
2 stem/progenitor cell.
- 1 5. The tissue culture system of claim 4, wherein said neural stem/progenitor
2 cell is situated within a neurosphere.
- 1 6. The tissue culture system of claim 4, wherein said neural stem/progenitor
2 cell is derived from a mammal.
- 1 7. The tissue culture system of claim 6, wherein said mammal is a mouse.
- 1 8. The tissue culture system of claim 6, wherein said mammal is a human.
- 1 9. The tissue culture system of claim 1, wherein said LPA receptor expressed
2 by said neural cell is selected from the group consisting of an LPA1, LPA2, and LPA3
3 receptor.

1 10. The tissue culture system of claim 1, wherein said stem/progenitor cell
2 expresses at least one of a Sca-1 and an AC133 antigen, and at least one of an LPA1,
3 LPA2 and LPA3 receptor.

1 11. The tissue culture system of claim 10, wherein said stem/progenitor cell
2 further expresses at least one marker of neuronal differentiation selected from the group
3 consisting of β III tubulin, and nestin.

1 12. A method of culturing at least one neurosphere from isolated brain cells,
2 the method comprising the steps of:

3 (a) providing at least one isolated brain cell; and

4 (b) culturing said at least one brain cell in a medium containing a
5 lysophosphatidic acid (LPA) compound under conditions that allow for growth and
6 differentiation of a neurosphere from said isolated brain cell.

1 13. The method of claim 12, wherein the step (b) of culturing the at least one
2 brain cell under conditions that allow for growth of a neurosphere further allows for
3 proliferation and differentiation of the cells within said neurosphere into at least one cell
4 type selected from the group consisting of a neuron, an astrocyte and an oligodendrocyte.

1 14. The method of claim 13, wherein said at least one cell type is a neuron,
2 wherein at least one lineage-specific marker is expressed by said cell, said marker
3 selected from the group consisting of β III tubulin and nestin.

1 15. An isolated neural cell cultivated in a basal culture medium comprising a
2 lysophosphatidic acid (LPA) compound.

1 16. The isolated neural cell of claim 15, wherein said cell is a stem/progenitor
2 cell.

1 17. The isolated neural cell of claim 15, wherein the form of said LPA
2 compound is selected from the group consisting of LPA 20:5, 18:1 (oleoyl), 16:0
3 (palmitoyl), and 14:0 (myristoyl).

1 18. The isolated neural cell of claim 17, wherein the form of said LPA
2 compound is LPA 18:1 (oleoyl) or LPA 16:0 (palmitoyl).